

Epipsocetae (Psocodea: 'Psocoptera') from Valle del Cauca and NNP Gorgona, Colombia

Epipsocetae (Psocodea: 'Psocoptera') de Valle del Cauca y PNN Gorgona, Colombia

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ABSTRACT

The results of a survey of the species of the Psocoptera infraorder Epipsocetae, in Valle del Cauca and National Natural Park (NNP) Gorgona are presented herewith. 84 species were identified, in 17 genera of Epipsocidae (42 species), Ptiloneuridae (30 species), Dolabellopsocidae (7 species), and Cladiopsocidae (5 species). 83.3% of the species found are new to science: 38 species of Epipsocidae, 23 species of Ptiloneuridae, five species of Dolabellopsocidae, and four species of Cladiopsocidae. An undescribed genus of Ptiloneuridae and two undescribed genera of Epipsocidae were found. The biological richness of Valle del Cauca-NNP Gorgona is enormous, if it is considered that they represent a little less than 2% of the total area of Colombia. The specimens studied are deposited in the Entomological Collection of the Universidad del Valle, Santiago de Cali, Colombia (MUSENUV).

Key words: Faunistics, neotropics, taxonomy, Psocomorpha.

RESUMEN

Se presentan los resultados de una prospección sobre las especies de Psocoptera del Infraorden Epipsocetae, en Valle del Cauca y Parque Nacional Natural (PNN) Isla Gorgona, Colombia. Se identificaron 84 especies en 17 géneros de Epipsocidae (42 especies), Ptiloneuridae (30 especies), Dolabellopsocidae (7 especies), y Cladiopsocidae (5 especies). El 83.3% de las especies encontradas son nuevas para la ciencia: 38 especies de Epipsocidae, 23 especies de Ptiloneuridae, cinco especies de Dolabellopsocidae, y cuatro especies de Cladiopsocidae. Se identificó un género no descrito de Ptiloneuridae, y dos géneros no descritos de Epipsocidae. La riqueza biológica de Valle del Cauca-PNN Gorgona es enorme, si se considera que representan menos del 2% de la superficie de Colombia. Los ejemplares estudiados están depositados en el Museo Entomológico de la Universidad del Valle, Santiago de Cali, Colombia (MUSENUV).

Palabras clave: Faunística, neotrópico, taxonomía, Psocomorpha.

INTRODUCTION

The increase, over the last 20 years, in the number of described species of Psocoptera, has evidenced the great lacks in the knowledge of the species in some areas of the planet, particularly in the Neotropics. This order has rapidly passed from 3200 species known, in 230 genera (Mockford, 1993), to 5557 species known, in 474 genera (García Aldrete, 2006 a). In Colombia, a megadiverse country, the knowledge of the species diversity in this order is quite poor; the number of Colombian species recorded in the Catalogue of World Species (Lienhard & Smithers, 2002), updated by Lienhard in 2004, only amounts to 78 species, in 42 genera and 20 families, which, as compared to the number of species in the New World, results extremely low.

The infraorder Epipsocetae includes about 275 species, in 36 genera of the families Epipsocidae, Ptiloneuridae, Dolabellopsocidae, Spurostigmatidae and Cladiopsocidae (Casasola González, 2006). Epipsocetae is monophyletic, well supported by several apomorphic characters (Yoshizawa, 2002; Casasola González, 2006).

Epipsocidae constitutes an assemblage of 27 described genera (Casasola González, 2006; García Aldrete, 2009, 2012; García Aldrete & Casasola González, 2008); evidence from recent collectings indicate that there may be more undescribed generic taxa, as vast areas in South America particularly in Colombia, Perú, Ecuador, Venezuela and Paraguay remain unsampled.

Dolabellopsocidae includes 38 species described in three genera, two of which, *Dolabellopsocus* and *Isthmopsocus*, are Neotropical.

Ptiloneuridae included, to the year 2007, eleven genera, with 57 described species, with *Triplocania* Roesler, and *Loneura* Navás the most species-rich genera. The family is mostly Neotropical.

Cladiopsocidae includes only the mostly Neotropical genus *Cladiopsocus* Roesler, with 16 described species (Eertmoed, 1986).

We here present the results of a survey of the species of Epipsocetae of Valle del Cauca and NNP (National Natural Park) Gorgona, Colombia.

MATERIAL AND METHODS

Study area. We had access to material previously collected in the Departament of Valle del Cauca and NNP Gorgona, by several collecting trips organized by the Universidad del Valle, Cali, Colombia. Valle del Cauca is located in southwest Colombia, limited east by the Central Cordillera, and limited west by the Pacific Ocean, with 200 kilometers of coast, and an area of 21,378 Km². It includes the thermic floors **warm**, **medium**, **cold**, and **páramo** (Paredes, 1986), in four large physiographic regions: Pacific lowlands, West Cordillera (with a large area occupied by the NNP Farallones), Geographic Valley of the Cauca River, and West Slope of the Central Cordillera (IGAC, 1988). NNP Gorgona belongs to the municipality of Guapi, Departament of Cauca, in the south Colombian Pacific. It includes the islands of Gorgona and Gorgonilla, which together, have a terrestrial area of 13.8 Km², with altitudes from 0 to 338 masl at Cerro La Trinidad (Chamorro, 1990).

From NNP Gorgona we studied the specimens collected by the “Scientific Expedition 2009 NNP Gorgona” and by the Project “Evaluation of the present state of the objects of faunistic conservation at Gorgona Island”. We also studied specimens deposited in the Institut Alexander von Humboldt, collected at the NNP Farallones. In Valle del Cauca, we conducted 46 collecting trips, and studied a small collection of support for teaching. Collecting was conducted in natural areas, in localities (Table 1), from 7 to 3100 meters of altitude. We visited 66 localities in 12 municipalities, in the four physiographic regions mentioned above.

Collecting Methods. The specimens were directly taken from the substrate by beating vegetation, and sweeping with a soft brush (3-4 cm wide) tree trunks with mosses and lichens, as well as trunk crevices; rock faces were also examined. The specimens were taken in rectangular plastic trays (15x40cm., and 10-15 cm. deep), they were taken from the tray with mouth aspirators and placed directly in 80% ethanol. Shannon traps were also used (for night collecting with mouth aspirators), and led mini light traps.

The preserved specimens were identified to genus level utilizing a Nikon SMZ 645 stereoscopic microscope. For species level identification the specimens were dissected and mounted on slides following González *et al.* (2011). The specimens were dissected in 80% ethanol, separating the head, right wings and legs, and the abdominal terminalia of males and females; the processed parts were mounted in slides in Canada balsam. The slides were dried at room temperature and stored horizontally; they were later examined in a compound Nikon E200 microscope, comparing with original descriptions of genera and species in the pertinent literature. Published identification keys were also utilized (García Aldrete, 2006 a; Mockford, 1993, and García Aldrete & Mockford, 2012).

RESULTS

The number of species of the four families of Epipsocetae found in Valle del Cauca and NNP Gorgona, was not only high (Table 2); 83.3% of them are undescribed species. Of the 84 identified species, five have been described recently (García

Aldrete *et al.*, 2011 a, b; García Aldrete *et al.*, 2012). The most species-rich families were Epipsocidae (42 species) and Ptيلونيریدا (30 species) (Table 2 and Figure 1). The new species will be dealt with elsewhere. In what follows, we present the information for each family and genus.

Ptiloneuridae. We found 29 species, in the genera *Euplocania* Enderlein (3 new species); *Loneura* Navás (13 species, 9 new); *Triplocania* Roesler (12 new species); *Loneuroides* García Aldrete (1 species). We also found specimens of an undescribed genus. The following list includes the records of the species found.

Colocania New genus (manuscript name).

1. *Colocania* sp. n. 1

Santiago de Cali, El Saladito, San Antonio, 27.I.2012, 3♂♂, 2♀♀. Santiago de Cali, Los Andes, Quebrada Honda, 23.I.2013, 1♂, 3♀♀. Santiago de Cali, Los Andes, Charco Azul, 30.I.2013, 1♂. On tree trunks with mosses and lichens.

Euplocania Enderlein, 1910

2. *Euplocania* sp. n. 1

Santiago de Cali, La Buitrera, 9.I.2011, 1♂. V.2010, 3♂♂. 25.VII.2010, 1♀. 15.VIII.2010, 1♀. 11.VI.2011, 2♂♂, 2♀♀. 15.VI.2011, 2♂♂, 2♀♀. 19.VI.2011, 2♀♀. Anserma nuevo, 10.IX.2011, 1♂. In light trap and on tree trunks.

3. *Euplocania* sp. n. 2

Dagua, Km. 30, Parcelación Plenitud, 24.IV.2011, 1♂. 27.VI.2011, 1♂. Santiago de Cali, Los Andes, Finca Monserrate, 2.IX.2011, 1♀. On tree trunks.

4. *Euplocania* sp. n. 3

Santiago de Cali, Los Andes, Finca Monserrate, 2.IX.2011, 1♀. Dagua, Queremal, El Edén, 11.XI.2012. 1♂. On dead branches with mosses.

Loneura Navás, 1927

5. *L. mirandaensis* García Aldrete.

Santiago de Cali, La Buitrera, 15.VI.2011, 1♀. 11.VI.2011, 1♂. 27.VII.2011, 1♂. 26.VIII.2011, 1♂. On tree trunks with mosses and lichens.

6. *L. gorgonaensis* García Aldrete, González & Sarria.

Palmeras Beach, 24-25.II.2011, 2♂♂. 27.II.-1.III.2011, 1♂. In light trap.

7. *L. insularis* García Aldrete, González & Sarria.

Palmeras Beach, 22-23.II.2011, 1♂. 24.II.2011, 3♂♂. In led light trap. Yundigua Beach, 27.III.2011, 1♂. In light trap. Cerro del Mirador, 28-29.V.2011, 1♂. In light trap.

8. *L. monticola* García Aldrete, González & Sarria.

Cerro Trinidad, 27.II-1.III.2011, 5♂♂. In led light trap, CT, 27.II-1.III.2011, 1♂. In light trap.

9. *L. andina* García Aldrete, Mendivil & González. Santiago de Cali. Los Andes. Finca Montserrat, 7.IX.2011, 1♂. 3.I.2013, 2♂♂, 1♀. On tree trunks with mosses and lichens.

10. *L. tuluaensis* García Aldrete, Mendivil & González. Tuluá, Mateguadua, Juan María Céspedes Botanical Garden, 27.VIII.2011, 3♂♂, 4♀♀. On tree and palm trunks.

11. *Loneura* sp. n. 1
Yumbo, Dapa, Finca Palo Alto, 19.III.2011, 2♂♂, 1♀. 30.III.2011-1.IV.2011, 2♂♂. In light trap. Roldanillo, Montañuela, 7.II.2013, 2♂♂, 3♀♀. On tree trunks with mosses and lichens.

12. *Loneura* sp. n. 2
Santiago de Cali, El Palomar, III.2012, 23♀♀, 13♂♂. Dagua, El Queremal, El Edén, 16.XI.2012. 2♂♂, 3♀♀. On cement walls with mosses.

13. *Loneura* sp. n. 3
Santiago de Cali, Villacarmelo, La Candelaria, 22.I.2011, 1♂. Santiago de Cali, Los Andes, Finca Monserrate, 20.I.2011, 2♀♀. 14.VI.2011, 4♂♂, 1♀. 15.VI.2011, 2♀♀. 4.VII.2011, 1♂. 7.IX.2011, 3♂♂, 3♀♀. 22.X.2011, 1♂, 2♀♀. La Cumbre, Bitaco, Chicoral, 26.III.2011, 1♀. Santiago de Cali, Los Andes, Charco Azul, 7.IX.2011, 1♂, 1♀. La Cumbre, La Virginia, 18.IX.2011, 1♀. On tree trunks with mosses and lichens.

14. *Loneura* sp. n. 4
Santiago de Cali, Los Andes, Finca Monserrate, 4.VII.2011, 1♂. 20.I.2011, 1♀. 15.VI.2011, 1♀. 4.VII.2011, 1♂, 2♀♀. 2.IX.2011, 2♂♂. 7.IX.2011, 8♂♂, 8♀♀. 14.X.2011, 1♀. 22.X.2011, 4♂♂, 2♀♀. Santiago de Cali, Los Andes, Charco Azul, 7.IX.2011, 2♂♂, 2♀♀. La Cumbre, Bitaco, Chicoral, 29.VI.2011, 1♀. On tree trunks with mosses and lichens.

15. *Loneura* sp. n. 5
Santiago de Cali, Los Andes, Finca Monserrate, 18.I.2011, 1♂. 4.VII.2011, 1♀. 7.IX.2011, 3♀♀. 22.X.2011, 1♂. Santiago de Cali, El Palomar (Km. 11), 27.I.2011. 1♀. Santiago de Cali, Quebrada Honda, I.23.2013, 3♂♂, 5♀♀. On tree trunks.

16. *Loneura* sp. n. 6
Dagua, Queremal, El Edén, 16.XI.2012, 2♀♀. On tree trunks with mosses and lichens.

17. *Loneura* sp. n. 7
Santiago de Cali, Quebrada Honda, I.23.2013, 1♂, 2♀♀. Santiago de Cali, Los Andes, Finca Monserrate, 23.I.2013, 1♂. On tree trunks with mosses and lichens.

Loneuroides García Aldrete, 2006 b

18. *Loneuroides venezolanus* García Aldrete.
Yumbo, Dapa, Finca Palo Alto, 16.X.2010, 1♀, on tree

trunks. 26-28.III.2011, 2♂♂, in light trap. Santiago de Cali, San Antonio, 22.IX.2012, 1♀, on tree trunks with mosses and lichens.

Triplocania Roesler, 1940

19. *Triplocania* sp. n. 1

Santiago de Cali, La Buitrera, 9.I.2011, 6♂♂, 2♀♀. 20.I.2011, 2♂♂. 23.I.2011, 4♂♂, 2♀♀. 29.I.2011, 1♂, 1♀. 5.II.2011, 2♀♀. 19.II.2011. 2♀♀. 9.IV.2011, 3♂♂. 31.VII.2011, 1♀. 26.VIII.2011. 1♀. 27.XI.2011. 1♀. 12.I.2011, 1♂. Santiago de Cali, Los Andes, Finca Monserrate, 18.I.2011, 2♀♀. 20.I.2011, 1♂, 1♀. 22.I.2011, 1♀. 13.VI.2011, 1♂, 1♀. 14.VI.2011, 10♂♂, 3♀♀. 4.VII.2011, 1♂, 2♀♀. 2.IX.2011, 2♀♀. 7.IX.2011, 7♂♂, 10♀♀. 22.X.2011, 5♂♂, 5♀♀. Santiago de Cali, Los Andes, ecological trail, 20.I.2011, 3♂♂. 4.VII.2011, 1♂, 2♀♀. Santiago de Cali, Villacarmelo, La Candelaria, 22.I.2011, 3♂♂. Santiago de Cali, Km. 11, 25.IV.2011, 1♀. 27.I.2012, 1♂. Yumbo, Dapa, Finca Palo Alto, 19.III.2011, 2♂♂, 2♀. 26.III.2011, 2♀♀. La Cumbre, Bitaco, Chicoral, 26.III.2011, 1♂, 2♀♀. 28.IV.2011, 1♀. 27.VI.2011, 6♂♂, 2♀♀. 29.VI.2011, 2♂♂, 3♀♀. La Cumbre, 18.IX.2011, 1♂. Santiago de Cali, Los Andes, Charco Azul, 7.X.2011, 1♂. On tree trunks and rock faces with abundant mosses and lichens.

20. *Triplocania* sp. n. 2

La Cumbre, Chicoral, 29.VI.2011, 2♂♂, 5♀♀. 20.VI.2011, 1♀. On rock faces on river margin.

21. *Triplocania* sp. n. 3

Santiago de Cali, La Leonera, El Pato, 14.X.2011, 2♂♂, 2♀♀. 22.X.2011, 2♂♂, 3♀♀. On pine branches with mosses.

22. *Triplocania* sp. n. 4

Santiago de Cali, Los Andes, Charco Azul, 23.I.2013, 1♂, 2♀♀. Santiago de Cali, Pichinde, 1.II.2013, 2♀♀. On tree branches with dead leaves.

23. *Triplocania* sp. n. 5

Dagua, Queremal, La Elsa, 9.XI.2012, 1♂, beating branches with dead leaves. Buenaventura, Alto Anchicayá, 30.I.-13.II.2001, 2♂♂, 1♀. In Malaise trap.

24. *Triplocania* sp. n. 6

Buenaventura, Alto Anchicayá, Murrapal, 20-21.II.2012, 1♂. In light trap.

25. *Triplocania* sp. n. 7

Dagua, Queremal, La Elsa, 16-17.XI.2012, 1♂, in light trap. 11-12.I.2013, 1♀, in light trap. Roldanillo, Buena Vista, 7.II.2013, 1♂, 1♀, Roldanillo, ca. Bélgica, 8.III.2013, 2♂♂, 4♀♀. On tree trunks with mosses.

26. *Triplocania* sp. n. 8

Buenaventura, Alto Anchicayá, 30.I.-13.II.2001, 1♀. In Malaise trap.

27. *Triplocania* sp. n. 9

Buenaventura, Alto Anchicayá, towards Murrupal, 15-16.II.2013, 1♂, in light trap. 30.I.-13.II.2001, 1♂. In Malaise trap.

28. *Triplocania* sp. n. 10

Buenaventura, Alto Anchicayá, 17.VII.2001, 1♀. In Malaise trap.

29. *Triplocania* sp. n. 11

Buenaventura, Alto Anchicayá, 15-16.II.2013, 1♂. In light trap.

30. *Triplocania* sp. n. 12

Buenaventura, Quebrada Pericos, 28-29.III.2013, 1♂. In light trap.

Epipsocidae. We found 42 species, in the genera *Edmockfordia*, *Epipsocus*, *Goja*, *Gojaoides*, *Gonzobandia*, *Mesepipsocus* and *Neurostigma*. *Gonzobandia* is endemic to Valle del Cauca. *Gojaoides* was recently erected by García Aldrete (2012). It is represented by ten new species, possibly endemic to Colombia. Two species represent two undescribed genera. Of the 42 species, only four have been described. The species list and distribution records in Valle del Cauca and NNP Gorgona follows:

Edmockfordia García Aldrete, 2009.

31. *Edmockfordia* sp. n. 1

Buenaventura, El Salto, Reserva Natural Pericos, 12.I.2013, 1♂.

Epipsocus Hagen, 1866.

32. *Epipsocus badonneli* Mockford.

Santiago de Cali, El Palomar (Km. 11), 27.I.2012, 5♂♂, 3♀♀.

33. *Epipsocus* sp. n. 1

Santiago de Cali, La Buitrera (Forest), XI.2008, 1♂, 2♀♀. Tuluá, Mateguadua (JMC Botanical Garden), XI.2012, 1♀.

34. *Epipsocus* sp. n. 2

Santiago de Cali, La Buitrera (Forest), 29.I.2011, 1♂, 1♀.

35. *Epipsocus* sp. n. 3

Santiago de Cali, Villa Carmelo (La Candelaria), 3.II.2011, 1♂, 1♀. Santiago de Cali, Los Andes (Finca Monserrate), 2.IX.2011, 1♂.

36. *Epipsocus* sp. n. 4

Santiago de Cali, Los Andes, Pueblo Nuevo, 15.VI.2011, 1♂.

37. *Epipsocus* sp. n. 5

Dagua, El Queremal, 27.I.2012, 1♂. La Elsa 17.XI.2012, 3♂♂, in led light trap.

38. *Epipsocus* sp. n. 6

Cauca, NNP Gorgona, Playa Blanca, 19.22.X.2010, 1♂, in Malaise trap. Trail to Yundigua Beach, 20-22.X.2010, 1♂, in Malaise trap. Ca. Piedra Redonda, 23-25.II.2011, 1♂, in Malaise trap. Trail to Blanca Beach, 26.II.2011, 1♂, in leaf litter.

39. *Epipsocus* sp. n. 7

Buenaventura, El Salto, Reserva Natural Pericos, 28-29.III.2013, 1♂.

40. *Epipsocus* sp. n. 8

Buenaventura, El Salto, Reserva Natural Pericos, 28-29.III.2013, 1♂.

41. *Epipsocus* sp. n. 9

Buenaventura, Alto Anchicayá, 11-12.I.2013, 1♂.

42. *Epipsocus* sp. n. 10

Santiago de Cali, Km.18, ca. Zingara, 30.IX.2010, 1♀.

43. *Epipsocus* sp. n. 11

Buenaventura, Alto Anchicayá, 20.XI.2012, 1♂, 5♀♀.

44. *Epipsocus* sp. n. 12

Santiago de Cali, Los Limones, 7.VII.2013, 1♂.

Goja Navás, 1927.

45. *Goja* sp. n. 1

Santiago de Cali, Pance, Quebrada El Pato, 18.VI.2011, 1♂. Santiago de Cali, Los Andes, Pueblo Nuevo, 15.VI.2011, 1♂. Yumbo, Dapa, Palo Alto, 19.III.2011, 2♂♂. 17.VI.2011, 1♂. Yumbo, Chicoral, 27.VI.2011, 3♂♂.

46. *Goja* sp. n. 2

Santiago de Cali, Felidia (El Pato, ca. La Teresita), 14.X.2011, 1♂.

47. *Goja* sp. n. 3

Santiago de Cali, San Antonio (La Horqueta), 27.I.2012, 1♂, 1♀.

48. *Goja* sp. n. 4

Yotoco Forest, 12.I.2011, 1♂. Santiago de Cali, Los Andes, Ecological trail, 20.I.2011, 1♂.

49. *Goja* sp. n. 5

Cauca, NNP Gorgona, La Camaronera, 23.II.2011, 1♂, 1♀.

Gojaoides García Aldrete, 2012.

50. *Gojaoides* sp. n. 1

Darién, upper part, 6.XI.2010, 2♂♂. Roldanillo, Montañuela, 7.II.2013, 1♂.

51. *Gojaoides* sp. n. 2

Roldanillo, Montañuela, 7.II.2013, 1♂.

52. *Gojaoides* sp. n. 3
Darién, ca. Puente Tierra, 6.XI.2010, 1♂.
53. *Gojaoides* sp. n. 4
Dagua, Queremal, La Elsa, 28.IX.2010, 1♂.
54. *Gojaoides* sp. n. 5
Cauca, NNP Gorgona, La Camaronera, 23.II.2011, 1♂.
55. *Gojaoides* sp. n. 6
Yumbo, Chicoral-Bitaco, 26.III.2011, 1♂.
56. *Gojaoides* sp. n. 7
Cerrito, Cerrito Adentro, 8.VII.2012, 1♂.
57. *Gojaoides* sp. n. 8
Yumbo, Chicoral, 29.VI.2011, 1♂, 1♀. La Cumbre, La Virginia, 18.IV.2011, 2♂♂. Yumbo, Dapa, Finca Palo Alto, 26.III.2011, 1♂.
58. *Gojaoides* sp. n. 9
Santiago de Cali, Felidia, El Pato, Los Yarumos Natural Reserve, 14.X.2011, 1♂. Santiago de Cali, Los Andes, Pueblo Nuevo, 18.I.2011, 1♂. Santiago de Cali, San Antonio, 10.III.2012, 1♂.
59. *Gojaoides* sp. n. 10
Santiago de Cali, Los Andes, Charco Azul, 20.I.2013, 1♂.
- Gonzobandia* García Aldrete, 2012.
60. *G. nancyae* García Aldrete.
Santiago de Cali, Los Andes, Finca Monserrate, 18.I.2011, 7♂♂, 5♀♀; 15.VI.2011, 1♂, 6♀♀. 4.VII.2011, 7♂♂. 4.IX.2011, 4♂♂; San Antonio, 23.V.2012, 1♂. On tree trunks densely covered with mosses. Villa Carmelo, La Candelaria, 3.II.2011, 2♂♂, 1♀. La Cumbre, Chicoral, Finca Loma Linda, 26.III.2011, 6♂♂. Yumbo, Dapa, Finca Palo Alto, 10.IX.2011, 1♂.
- Mesepipsocus* Badonnel, 1969.
61. *Mesepipsocus brevistigma* New.
Anserma nuevo, fish farm, 10.IX.2011, 1♀.
62. *Mesepipsocus* sp. n. 1
Yumbo, Dapa, Finca Palo Alto, 10.IX.2011, 1♂.
63. *Mesepipsocus* sp. n. 2
Santiago de Cali, La Buitrera, 13.X.2010, 1♀.
64. *Mesepipsocus* sp. n. 3
La Cumbre, La Virginia, 18.IX.2011, 1♀, 1♂.
65. *Mesepipsocus* sp. n. 4
Santiago de Cali, La Buitrera (forest), 25.VII.2010, 2♀♀.
66. *Mesepipsocus* sp. n. 5
Cauca, NNP Gorgona, El Poblado, 7.XI.2009, 1♀, 1♂, on house wall. 21.XI.2009, 2♀♀, 1♂, on house wall. 22 and 26.XI.2009, 8♂♂, on wooden box. 24.XI.2009, 1♀, on palm leaves thatched roof.
67. *Mesepipsocus* sp. n. 6
Santiago de Cali, La Buitrera (Forest), 25.VII.2010, 2♀♀; Los Andes, Quebrada Honda, 23.I.2013, 6♂♂, 4♀♀; San Antonio, 14.IV.2012, 1♂. La Cumbre, 14.IX.2012, 1♂. Roldanillo, Montañuela, 7.II.2013, 4♂♂, 4♀♀.
- Neurostigma* Enderlein, 1900.
68. *Neurostigma* sp. n. 1
Santiago de Cali, La Buitrera, 23.VII.2011, 1♂, 1♀.
69. *Neurostigma* sp. n. 1
Santiago de Cali, Km. 18, towards Zingara, 17.VI.2010, 1♂.
70. *Neurostigma* sp. n. 2
Santiago de Cali, La Buitrera, 25.III.2009, 2♂♂.
- New genus 1.
71. New genus 1, sp. n. 1
Yumbo, Dapa, Finca Palo Alto, 16.X.2010, 1♂.
- New genus 2.
72. New genus 2, sp. n. 1
Santiago de Cali, La Buitrera (Forest), 29.I.2011, 5♂♂, 7♀♀.
- Cladiopsocidae.** This family includes only the genus *Cladiopsocus*, with 16 described species, distributed in Angola, Central and South America (Eertmoed, 1986). Seven species are known in South America, and one of them *Cladiopsocus ramulosus* (Enderlein, 1903), has been recorded in Colombia and Perú (Lienhard & Smithers, 2002). In this survey, we found five species, four of them new to science. The list and records of the species found follows:
- Cladiopsocus* Roesler, 1940.
73. *Cladiopsocus* sp. n. 1
Cauca, Guapi, NNP Gorgona, towards Cerro Trinidad, 2011, 1♂. Valle del Cauca, Dagua, Km.30, 29.V.2011, 1♀. Santiago de Cali, La Buitrera, 18.III.2012, 1♂. Tuluá, Mateguadua, 1.IX.2012, 1♂.
74. *Cladiopsocus* sp. n. 2
Tuluá, Mateguadua, JMC Botanical Garden, 21.VIII.2010, 1♀. Santiago de Cali, El Palomar, Km. 11, 24.III.2012, 3♀♀.
75. *Cladiopsocus multimaculatus* Eertmoed.
Cauca, Guapi, NNP Gorgona, Blanca Beach, 19.22.X.2010, in Malaise trap, 1♂. CT1, 27.II.2011, 5♂♂. Palmeras Beach, 23.II.2011, 3♂♂. Trail to Yundigua Beach, 17.II.-2.III.2011, 1♂, 23.II.2011, 1♂. Cerro Mirador, 24-25.V.2011, 2♂♂. Cerro Mirador, 28-29.V.2011, 2♂♂. Other than the first record, all the specimens caught in light trap.

76. *Cladiopsocus* sp. n. 3

Dagua, Queremal, El Edén, 11.XI.2012, 1♀. Buenaventura, Alto Anchicayá, towards Murrupal, 11-12.I.2013, 1♂, 1♀, in light trap.

77. *Cladiopsocus* sp. n. 4

Dagua, Km. 30, Parcelación Plenitud, 29.IV.2011, 1♀.

Dolabellopsocidae. This family includes 38 species in the genera *Dolabellopsocus* Eertmoed, 1973, *Isthmopsocus* Eertmoed, 1973, and *Auroropsocus* Eertmoed, 1973. The first two are Neotropical, and the third one is Oriental. We found seven species in the first two genera, five of which are new to science; the records are as follows:

78. *Dolabellopsocus* Eertmoed, 1973.78. *Dolabellopsocus similis* Mockford.

Santiago de Cali, La Buitrera, 24.VII.2010, 1♀. 27.VIII.2010, 1♀. 28.VIII.2010, 1♂. 14.IX.2010, 1♂, 2♀.

79. *Dolabellopsocus lobatus* Mockford.

Santiago de Cali, La Buitrera, 25.X.2012, 2♀. Campus Universidad del Valle, 12.X.2012, 2♂. Pance, towards Topacio, 4.XI.2012, 1♀.

80. *Dolabellopsocus* sp. n. 1

Cauca, Guapi, NNP Gorgona, ca. Poblado, 16.XII.2007, canopy fogging, 3♀. Piedra Redonda, 23-25.II.2011, 1♀, in Malaise trap. Trail to Blanca Beach, 26.II.2011, 1♀. Cerro Mirador, 24-25.II.2011, 1♀, in light trap, 2♂ in Malaise trap.

81. *Dolabellopsocus* sp. n. 2

Santiago de Cali, Los Andes, Quebrada Honda, 3.I.2013, 1♂. Tuluá, Mateguadua, JMC Botanical Garden, 21.V.2012, 1♂.

82. *Dolabellopsocus* sp. n. 3

Santiago de Cali, Los Andes, Quebrada Honda, 3.I.2013, 1♀. 23.I.2013, 1♂, 1♀. 30.I.2013, 1♀. On tree trunks.

83. *Isthmopsocus* Eertmoed, 1973.83. *Isthmopsocus* sp. n. 1

Cauca, Guapi, NNP Gorgona, Cerro Mirador, 24-25.X.2011, 1♂, in light trap. Azufrada, 27.XI.2011, 1♂, 3♀, in leaf litter and Malaise trap.

84. *Isthmopsocus* sp. n. 2

Cauca, Guapi, NNP Gorgona, ca. Azufrada, 26.II.2011, 1♂, 1♀, in leaf litter. Santiago de Cali, La Buitrera, V.2010, 1♀.

DISCUSSION

Ptiloneuridae. Of the eleven genera and 57 species described in the family up to 2007 (Moreira de Castro, 2007), only one species was known in Colombia (*Triplocaenia colombiana* García Aldrete, 1999); five more species have been described since (García Aldrete *et al.*, 2011 a & b) (Table

2). The increase in the number of recorded species of this family, both in Colombia and in the Neotropics in general, has been considerable, particularly in the genera *Loneura* and *Triplocaenia*. In Colombia the number of species was raised to 29. Of the 23 new species found in this survey, only two have been described: *L. andina* García Aldrete, Mendivil & González (2012), and *L. tuluaensis* García Aldrete, Mendivil & González (2012).

Epipsocidae. In addition to the eleven genera recognized by Mockford (1998) in this family, four more were added by Li Fasheng (2002): *Liratepipsocus*, *Metepipsocus*, *Spordoepipsocus*, and *Valvepipsocus*, also, nine genera described by García Aldrete (2004 a, b; 2005; 2009, 2012): *Ianthorntonia*, *Rogojiella*, *Incapsocus*, *Papillopsocus*, *Terryerwinia*, *Edmockfordia*, *Phallofractus*, *Gonzobandia* and *Gojaoides*. Casasola González (2006) invalidated the family Neurostigmatidae, and included *Neurostigma*, together with *Parepipsocus* Badonnel, and *Dimidistriata* Li Fasheng & Mockford (1997), in Epipsocidae. Presently, with the information in Casasola González (2006); García Aldrete & Casasola González (2008), the description of *Gonzobandia* (García Aldrete, 2012), and the two new genera found in this survey, the number of genera in this family reaches 30.

This is the most species-rich family in Valle del Cauca and NNP Gorgona, with 42 species, 36 of which are still undescribed. The finding of a new species of *Edmockfordia* is of interest, as this genus was only known from Belize (García Aldrete, 2009).

The females of the species of *Goja* and *Gojaoides* are apterous or brachypterous, and the males of the 14 species included in *Gojaoides* (García Aldrete, 2012), have forewings with caeciliusid venation (Rs 2 branched, M 3 branched), as well as hindwings with veins Rs-M joined by a crossvein; the new species 8 and 9 of this survey have the hindwing veins Rs-M fused by a short distance, but the phallosomes of both are similar to the phallosome of the new species 1, with hindwings Rs-M joined by a crossvein. The new species 7 of *Gojaoides*, has the hindwing Rs-M fused, but the phallosome is similar to that of *Gojaoides semiaptera* (Mockford, 1996), with hindwing Rs-M joined by a crossvein. On the basis of the above, we widen the diagnosis of *Gojaoides* to include species with “male hindwings with Rs-M joined by a crossvein or fused for a short distance”. With the findings of this survey, the number of species of *Gojaoides*, is increased from 14 to 24 (71% increase).

Cladiopsocidae. With the new findings, the number of species in *Cladiopsocus* is raised to 20. Colombia and Brazil, have six species each, none of them shared. *C. ramulosus* (Enderlein, 1903), the only species previously known in this family in Colombia, occurs also in Peru (Lienhard & Smithers, 2002), but it was not found in Valle del Cauca. Of the other species, *C. multimaculatus* Eertmoed (1986), is shared with Panama. All the species found are assignable to the groups of subgenus *Cladiopsocus*, proposed by Eertmoed (1986). *C. sp. n. 1*, ca. *ramulosus*, belongs in group 1, subgroup 1; it has

multiple vein stubs on the forewings as in *C. ramulosus*, but differs from it in the phallosome, paraprocts and epiproct. *C. sp. n. 2*, belongs in group 1, subgroup 2, by not having vein stubs. It is close to *C. interruptus* (Eertmoed, 1986), from which it differs in phallosome characters and male paraprocts. *C. sp. n. 3*, ca. *multimaculatus*, is close to *C. multimaculatus* (Eertmoed, 1986), but differs from it in the shape of the hypandrium. Both belong in group 2, but the female of *C. sp. n. 3*, ca. *multimaculatus* differs in the shape of the subgenital plate. We only found females of *C. sp. n. 4*, and hence, it is not assignable to either of the two subgenera.

Dolabellopsocidae. The two genera found in this survey, *Dolabellopsocus* and *Isthmopsocus*, include 21 y 9 especies, respectively; with the five new species found, those figures are increased to 24 and 11 respectively. Brazil (19 species), and Colombia (9 especies), are the most species rich, sharing only two species, *D. lobatus* Mockford, and *D. similis* Mockford, previously considered as endemic to Brazil (García Aldrete & Mockford, 2009). The two species of *Isthmopsocus* are undescribed; *I. sp. n. 1*, is close to *I. lanceolatus* Mockford; *I. sp. n. 2* is similar to *I. barbatus* Mockford. *Isthmopsocus imperfectus* Badonnel, and *Dolabellopsocus incertus* Badonnel, previously recorded in Colombia, were not found in Valle del Cauca.

KEY TO FAMILIES AND GENERA OF EPIPSOCETAE FROM VALLE DEL CAUCA-NNP GORGONA, COLOMBIA

(Males only for *Goja* and *Gojaoides*)

1. Forewing with one anal vein (Figs. 14, 18, 19, 21, 22, 25) Epipsocidae 4
- 1.' Forewing with two anal veins (Figs. 13, 15, 16, 20, 23, 26) 2
2. Pretarsal claw with pulvillus curved near the base, distally expanded (Fig. 10); outer cusp of the lacinial tip with no more than three denticles (Fig. 7) Dolabellopsocidae.....13
- 2'. Pretarsal claw with pulvillus straight and distally pointed (Figs. 8 & 9); outer cusp of the lacinial tip with more than three denticles (Figs. 5 & 6) 3
3. Labral sclerites reaching the proximal margin of the labrum, curving outwards towards the lateral margins (Fig. 3); with interommatidial setae; male paraprocts with mesal prongs (Fig. 12)..... *Cladiopsocidae* 14
- 3.' Labral sclerites not reaching the proximal margin of the labrum, if they do, they do not curve towards the lateral margins (Figs. 2 & 4); without interommatidial setae; male paraprocts not pronged (Fig. 11) ... *Ptiloneuridae* 14
4. Forewing with a series of transverse veins in the pterostigma (Fig. 21) *Neurostigma* Enderlein
- 4.' Forewing without transverse veins in the pterostigma (Figs. 14, 18, 19, 22, 25) 5

5. Hindwing veins Rs-M joined by a crossvein or diverging from a point (Figs. 30, 36) 6
- 5.' Hindwing veins Rs-M fused for a variable length (Figs. 27, 29, 33, 35) 7
6. Forewing with caeciliusid venation (Fig. 18) (part)..... *Gojaoides* García Aldrete
- 6.' Forewing with supernumerary venation (Fig. 22) *Goja* Navás
7. Forewing with supernumerary venation (Figs. 14, 19, 22, 25) 8
- 7.' Forewing with caeciliusid venation (Fig. 18) 10
8. Forewing with vein Rs 2 branched, and with vein M 4 branched (Fig. 19). Phallosome V shaped, with robust side struts, basally curved outwards, posteriorly projected in the middle, external parameres well developed and sclerotized, endophallus membranous, without sclerites (Fig. 48); male epiproct with a field of papillae *Edmockfordia* García Aldrete
- 8.' Forewing with vein Rs 3 branched, vein M with more than 4 branches. Phallosome U shaped, without external parameres (Figs. 14 & 25.).....9
9. Hindwing with vein M 2 branched (Fig. 35). Forewing with crossveins between Rs-pterostigma and between R2+3-pterostigma (Fig. 14); phallosome with median projection wide (Fig. 49) New genus 1
- 9.' Hindwing with vein M 3 branched (Fig. 33). Forewing with vein Rs 3 branched, M 7 branched (Fig. 25); phallosome with a wide, tranverse radula (Fig. 45) New genus 2
10. Phallosome simple, U or V shaped, open anteriorly (Fig. 46) 11
- 10.' Phallosome complex, usually closed anteriorly, with endophallic sclerites, the mesal one well defined, distally pointed, or absent, external parameres variable (Figs. 47 & 50) (part) *Gojaoides* García Aldrete
11. External parameres slender, bow shaped, distally rounded; endophallus radular, with a longitudinal slit *Gonzobandia* García Aldrete
- 11.' External parameres and endophallus, not as above (Fig. 46) 12
12. Females with at least remnants of v1 (Fig. 37) *Epipsocus* Hagen
- 12.' Females without v1 (Fig. 38) *Mesepipsocus* Badonnel
13. Vein 2A of forewing fused distally to 1A (Fig. 26); dorsal ocelli well developed *Isthmopsocus* Eertmoed
- 13.' Vein 2A of forewing not fused to 1A, ending in the anal cell or at wing margin (Fig. 24); dorsal ocelli reduced or absent *Dollabellopsocus* Eertmoed
14. Vein M of hindwing unbranched (Figs. 31 & 34) 15
- 14.' Vein M of hindwing with two or more branches (Figs. 28 & 32) 16
15. Vein M of forewing 3 branched, sometimes M3 forked (Fig. 20); hypandrium of 1-5 sclerites, generally a large central piece flanked by two small sclerites (Fig. 44) *Triplocaenia* Roesler
- 15.' Vein M of forewing with 4-5 branches (Fig. 23); hypandrium similar to *Triplocaenia*

- *Euplocania* Enderlein
 16. Forewing with vein 2A simple; pterostigma rounded posteriorly (Figs. 13 & 17) 17
 16.' Forewing with a crossvein between 2A and wing margin; pterostigma clearly pointed toward Rs (Fig. 16) ..
 *Loneuroides* García Aldrete
 17. Hypandrium simple, bell shaped, with a digitiform anterior projection (Fig. 42); vein 2A of forewing ending in the membrane, not reaching wing margin (Fig. 13)
 *Colocania* (manuscript name)
 17.' Hypandrium of at least one sclerite, usually with 3-5 sclerites; a large central piece flanked by 2 or 4 small sclerites (Figs. 39-41); vein 2A of forewing reaching wing margin (Fig. 17) *Loneura* Navás

ACKNOWLEDGMENTS

We thank Oscar Saenz Manchola, Fabio Andrei Sarria and Andrés Felipe Vinazco, for their support in the field work for the Project “Insecta: Psocoptera (Epipsocetae y Lachesillidae) de Valle del Cauca y PNN Isla Gorgona, Colombia”, financed by the Universidad del Valle, Santiago de Cali, Colombia (Project CI 7874). We also thank Jairo Andrés Moreno for the donation of some specimens. Special thanks to the Institute Alexander von Humboldt for allowing us to examine specimens collected by the Project on Insects of National Natural Parks of Colombia. ANGA thanks Instituto de Biología, Universidad Nacional Autónoma de México, for continuous research support. RGO, NSC, JAM and NRC thank Departamento de Biología, Facultad de Ciencias Naturales y Exactas, Vicerrectoría de Investigaciones, Universidad del Valle, Santiago de Cali, Colombia, for logistic and financial support to this research project. This work is dedicated, with enormous pleasure, to Dr. Pedro Reyes Castillo, of the Instituto de Ecología, A. C., Xalapa, Veracruz, México, in recognition to the vast contribution he has made to understand the taxonomy of the Passalidae.

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Recibido: 9 de agosto 2013

Aceptado: 11 de noviembre 2013

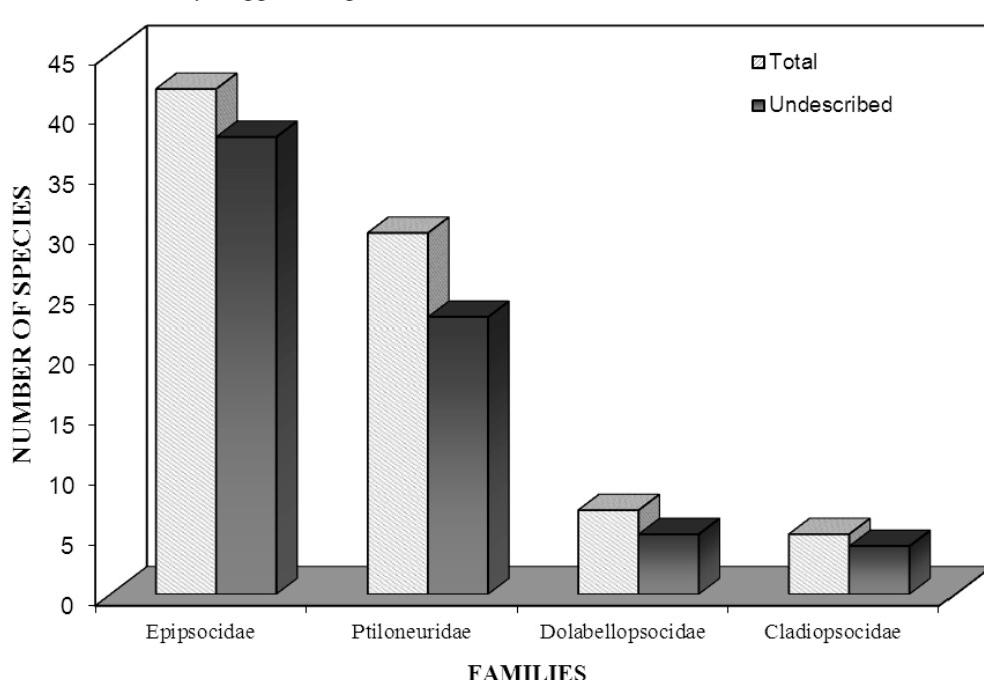


Figure 1. Number of species, total and undescribed for each of four Epipsocetae families, found in Valle del Cauca and NNP Gorgona, Colombia.

Table 1. Coordinates and altitude (meters) of collecting localities for Epipsocetae in Valle del Cauca and NNP Gorgona.

MUNICIPALITY	LOCALITY	COORDINATES		ALTITUDE (M)
Anserma Nuevo	Granja piscícola	4°47'29.66"N	75°59'56.65"W	952
	Alto Anchicayá	3°26'N	76°48'W	900
	Alto Anchicayá (Represa)	3°32'04.1"N	76°52'22.6"W	656
Buenaventura	Alto Anchicayá (Vía Murrupal)	3°33'10.1"N	76°52'58.3"W	641
	Alto Anchicayá (Murrupal)	3° 33'09"N	76°53'11.1"W	656
	El Salto, Reserva Q. Pericos	3°56'N,	76°47'W	350
Dagua	El Queremal	3°31'37.6"N	76° 42' 58.8"W	1482
	El Queremal, La Elsa	3°33'56.1"N	76°44'01.9"W	1032
	El Queremal, El Edén (Fca. La Primavera)	3°31'40.04"N	76°45'29.5"W	1290
Darién	Kilómetro 30 (Parcelación Plenitud)	3°34'19.8"N	76°39'46.5"W	1544
	Ca. Lago Calima	3°55'41.38"N	76°24'W	1680
	Ca. Puente Tierra	3°53' 21.5"N	76°24' W	1600
El Cerrito	Cerrito, Cerrito Adentro	3° 38'41.2"N	76°09'34.8"W	1859
	La Cumbre	3° 38'17.9"N	76° 33' 41.7"W	1716
	La Cumbre (La Virginia)	3°38'18.1"N	76° 32' 55.3"W	1783
Roldanillo	Montañitas	3°38'11.1"N	76° 31' 53.3"W	1665
	Buenavista	4°25'16.6"N	76°9' 25.6"W	1550
	Ca. Bélgica	4°26'46.6"N	76°12'33.6"W	1894
Santiago de Cali	Montañuela	4°26'46.6"N	76°11'21.2"W	1789
	Vía a Bélgica	4°26'57.7"N	76°13'21.9"W	1781
	El Palomar (Kilómetro 11)	3°28' 40.0"N	76°36'0.3"W	1549
Tuluá	Felidia, El Pato	3°26'34.6"N	76°39'49.5"W	2328
	Felidia (Ca. La Teresita, El Pato)	3°26'34.6"N	76°39'46.7"W	2058
	Felidia (Reserva Los Yarumos)	3°26'59.4"N	76°39'49.5"W	2328
Yotoco	Kilómetro 18 (Vía Zíngara)	3°30'38.3"N	76°37'13.8"W	1990
	La Buitrera	3°22'20.5"N	76°34' 11.3"W	1153
	Los Andes, Quebrada Honda	3°26'04.9"N	76°38'3.7"W	1818
Yumbo	Los Andes (Finca Monserrate)	3°25'57.3"N	76°37'15.4"W	1682
	Los Andes, Charco Azul	3°25'20.3"N	76°36'50.3"W	1658
	Los Andes (Sendero Ecológico)	3°26'6.7"N:,	76°37'39.9"W	1716
Guapi*	Los Limones	3°28'35.50"N	76°33'53.12"W.	1200
	Peñas Blancas	3°25'37.7"N	76°39'14.4"W	1950
	Pichindé (Bañadero)	3°26'04.8"N	76°36'50.7"W	1511
Guapi*	Pueblo Pance	3°19'43.4"N	76°38'18.9"W	1616
	San Antonio (Finca San Francisco)	3°29'30.7"N	76°37'09.0"W	1875
	San Antonio (La Horqueta)	3°30'38.3"N	76°37'13.8"W	1990
Guapi*	Villa Carmelo (La Candelaria)	3°22'15.4"N	76°37'27.4"W	1620
	Mateguadua (JBJMC) E1	4°01'45.1"N	76°10'03.7"W	1121
	Mateguadua (JBJMC) E2	4°01'29.5"N	76°09'45.4"W	1127
Guapi*	Bosque de Yotoco	3°52'N	76°23'W	1609
	Dapa (Finca Palo Alto)	3°34'9.0"N	76°34'13.6"W	1866
	Dapa E3	3°31'54.6"N	76°36'40.3"W	1979
Guapi*	Chicoral (Acueducto)	3°34'18.4"N	76°35'36.7"W	1819
	Chicoral E1	3°34'30.3"N	76°35'36.2"W	1722
	PNN Gorgona, El Poblado	2°57'57.7"N	78°10'24.4"W	21
Guapi*	PNN Gorgona, Piedra Redonda	2°56'31.0"N	78°11'33.9"W	32
	PNN Gorgona, Playa Yundigua	2°98'52.8"N	78°17'5.5"W	7
	PNN Gorgona, Playa Palmeras	2°56'28.6"N	78°12'21.4"W	28
Guapi*	PNN Gorgona, Playa La Camaronera	2°57'13.3"N	78°11'48.6"W	15
	PNN Gorgona, Cerro del Mirador	2°57'9"N	78°11'3.6"W	241

* Department of Cauca

Table 2. Number of species in genera of four families of Epipsocetae collected in Valle del Cauca and NNP Gorgona.

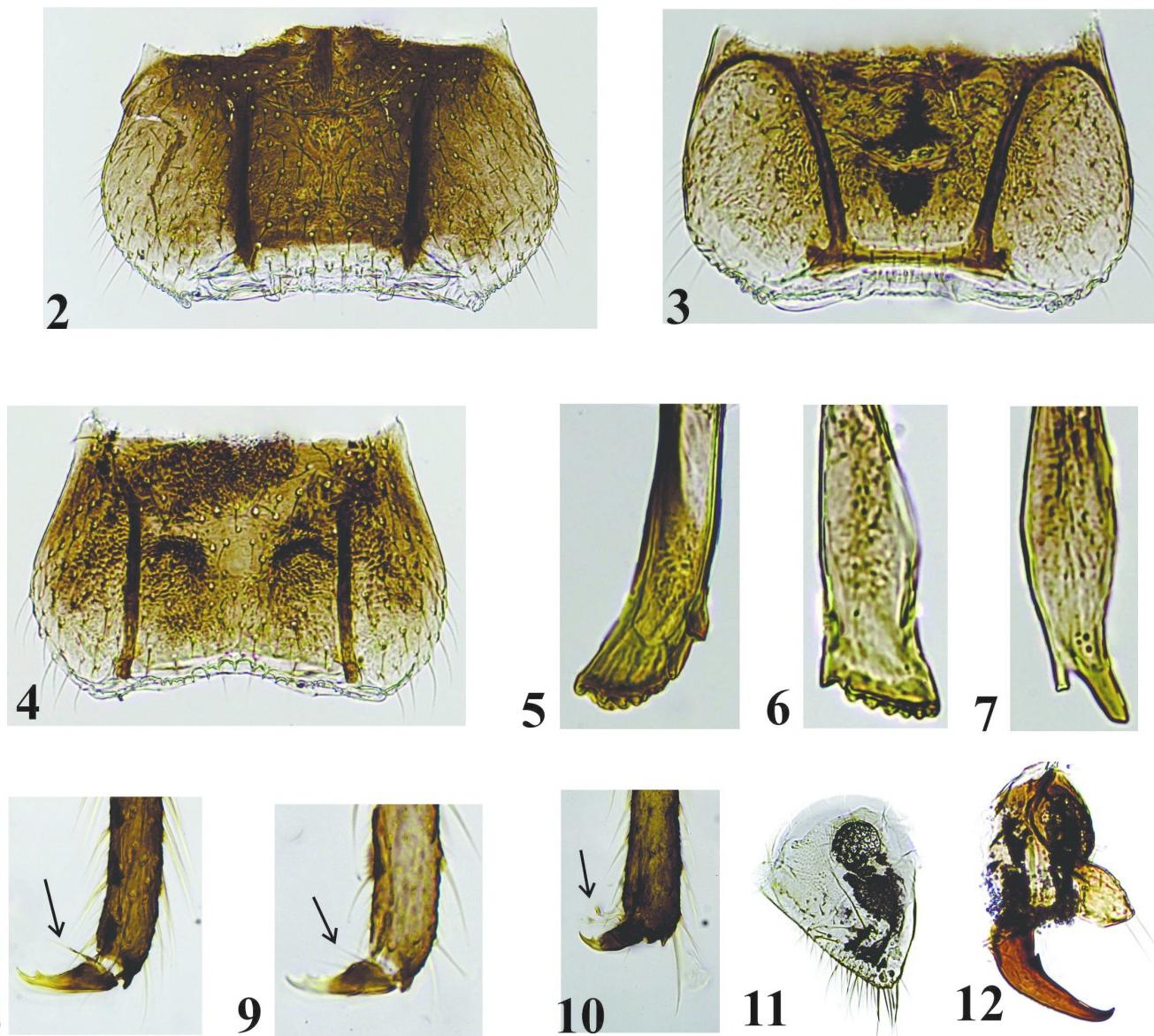
Family	Genus	Number of species			
		Described	New	Total	%
Ptiloneuridae	<i>Loneura</i>	6	7	13	15.5
	<i>Triplocania</i>	0	12	12	14.3
	<i>Euplocania</i>	0	3	3	3.6
	<i>Loneuroides</i>	1	0	1	1.2
Epipsocidae	<i>Colocania</i> gen n.	0	1	1	1.2
	<i>Edmockfordia</i>	0	1	1	1.2
	<i>Epipsocus</i>	1	12	13	15.5
	<i>Gonzobandia</i>	1	0	1	1.2
Epipsocidae	<i>Mesepipsocus</i>	1	6	7	8.3
	<i>Neurostigma</i>	1	2	3	3.6
	<i>Goja</i>	0	5	5	6.0
	<i>Gojaoides</i>	0	10	10	11.9
Cladiopsocidae	New genus 1	0	1	1	1.2
	New genus 2	0	1	1	1.2
	<i>Cladiopsocus</i>	1	4	5	6.0
	<i>Dolabellopsocus</i>	2	3	5	6.0
Dolabellopsocidae	<i>Isthmopsocus</i>	0	2	2	2.4
	TOTAL	17	70	84	100.0

Table 3. Number of species described and undescribed, in four genera of Ptiloneuridae in the Americas.

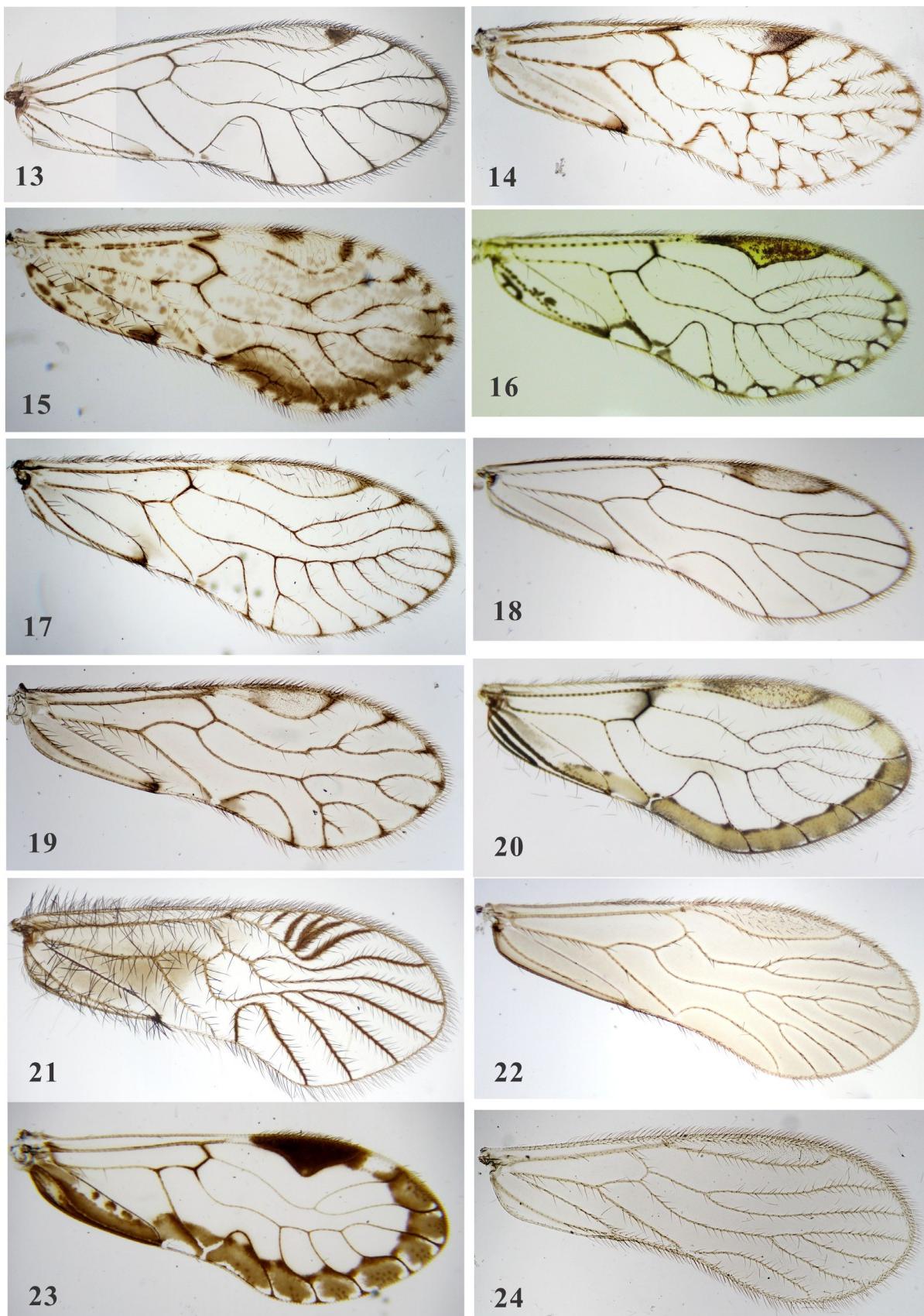
Area	Country	Number of species/ genus				Total
		<i>Loneura</i>	<i>Triplocania</i>	<i>Euplocania</i>	<i>Loneuroides</i>	
North America	USA	1	-	-	-	1
	Mexico	9	5	-	-	14
Central America	Belize	1	2	-	-	3
	Guatemala	1	1	-	-	2
	Nicaragua	4	2	1	-	7
	Costa Rica	3	1	-	-	4
	Panama	1	-	-	-	1
South America	Argentina	1	-	-	-	1
	Bolivia	3	1	-	-	4
	Brasil	10	11	4	-	25
	Colombia	14	13	3	1	31
	Ecuador	1	-	-	-	1
	Peru	3	5	5	-	13
	Venezuela	2	-	-	1	3
	Paraguay	-	-	1	-	1

Table 4. Number of species of three genera of Cladiopsocidae and Dolabellopsocidae in the New World.

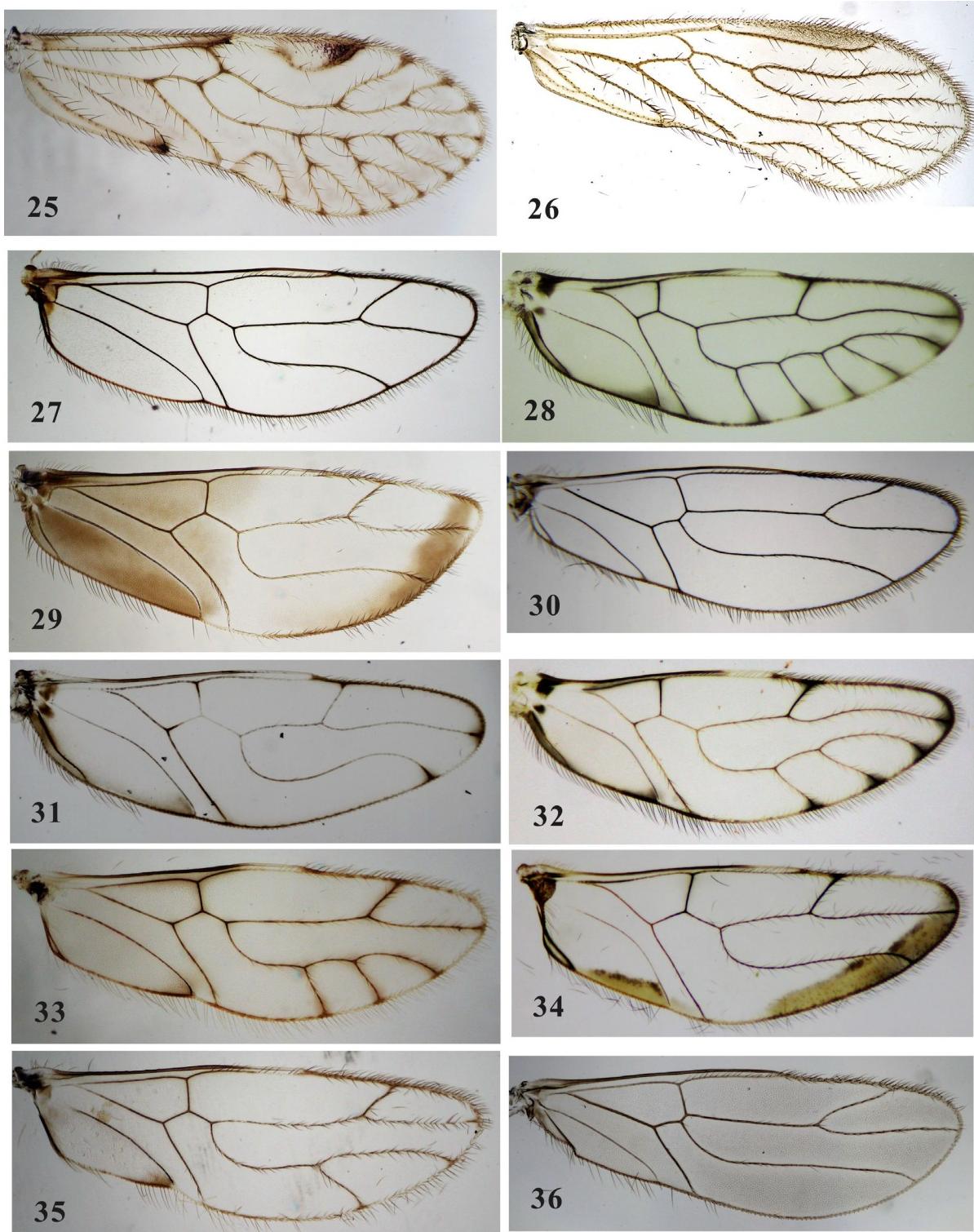
Country	Number of species/ genus			Total
	<i>Cladiopsocus</i>	<i>Dolabellopsocus</i>	<i>Isthmopsocus</i>	
Brasil	6	12	7	25
Colombia	6	6	3	15
Mexico	2	1	0	3
Panama	5	1	1	7
Peru	1	3	0	4
Venezuela	0	2	0	2
Others	1	4	0	5



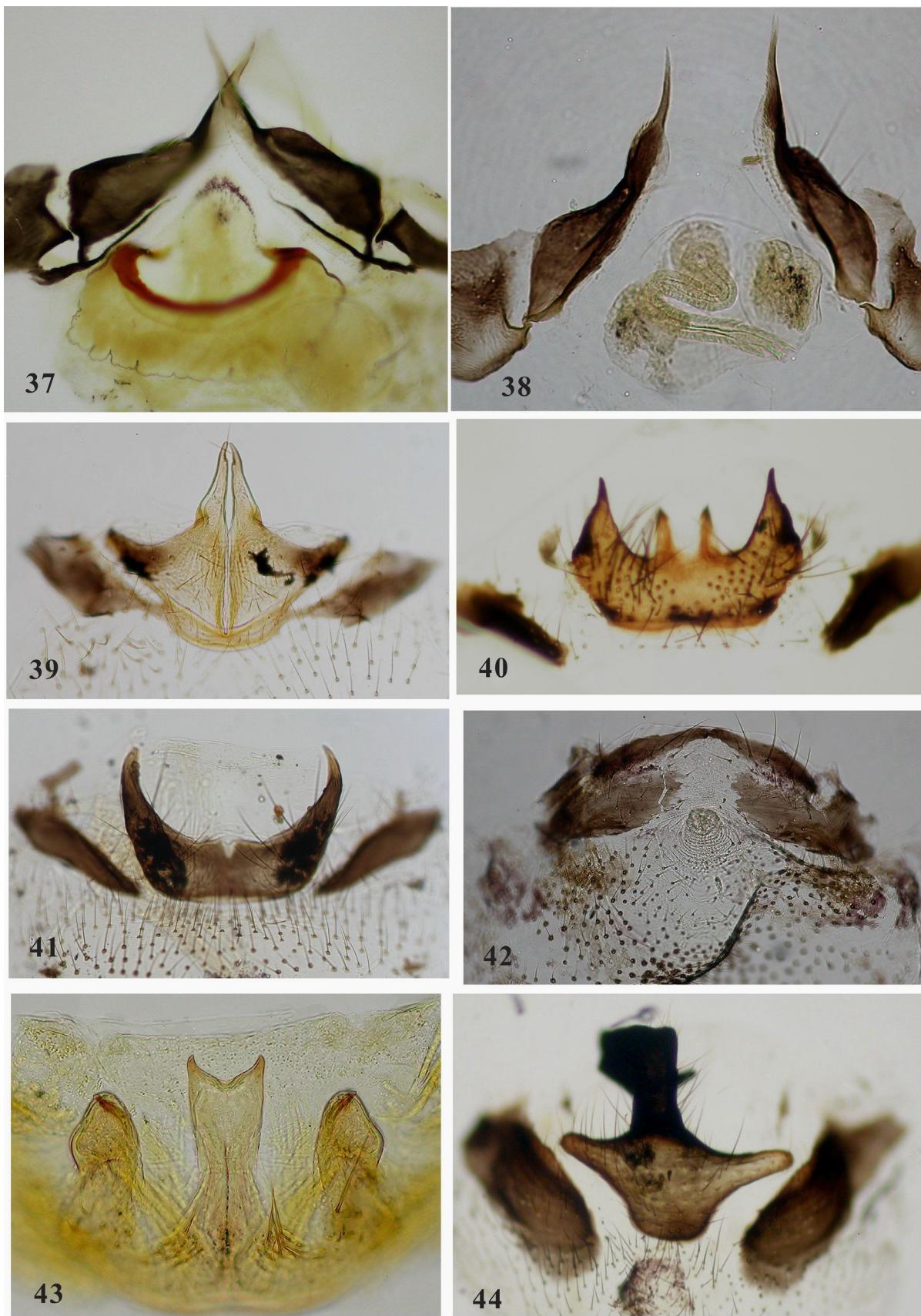
Figures 2-12. Labrum: 2. *Loneura*. 3. *Cladiopsocus*. 4. *Dolabelllopsocus*. Lacinial tips: 5. *Loneura*. 6. *Cladiopsocus*. 7. *Dolabelllopsocus*. Pretarsal claws: 8. *Loneura*. 9. *Cladiopsocus*. 10. *Dolabelllopsocus*. Paraprocts: 11. *Euplocania*, 12. *Cladiopsocus*.



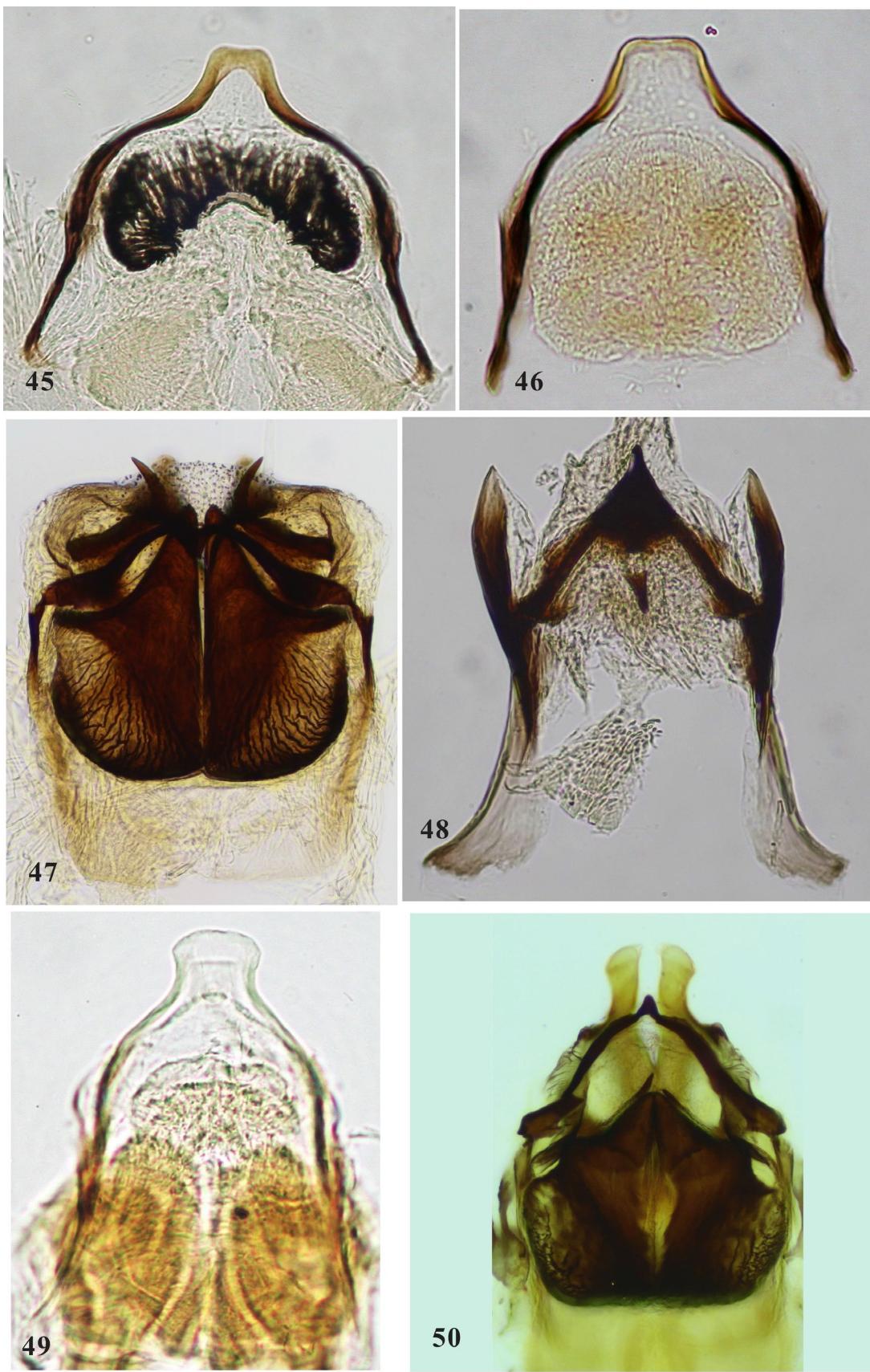
Figures 13-24. Forewings: 13. *Colocania* gen. n. 14. New genus 1. 15. *Cladiopsocus*. 16. *Loneuroides*. 17. *Loneura*. 18. *Gojaoides*. 19. *Edmockfordia*. 20. *Triplocania*. 21. *Neurostigma*. 22. *Goja*. 23. *Euplocania*. 24. *Dolabellopsocus*.



Figures 25-36. Forewings: 25. New genus 2. 26. *Isthmopsocus*. Hindwings: 27. *Epipsocus*. 28. *Loneura*. 29. *Epipsocus*. 30. *Gojaoides*. 31. *Euplocania*. 32. *Loneura*, 33. New genus 2. 34. *Triplocania*. 35. New genus 1. 36. *Goja*.



Figures 37-44. Gonapophyses + IX sternum: 37. *Epipsocus*. 38. *Mesepipsocus*. Hypandrium: 39. *Loneura*. 40. *Loneura*. 41. *Loneura*. 42. *Colocania* gen. n. 43. *Loneurooides*. 44. *Triplocaenia*.



Figures 45-50. Phallosome: 45. New genus 2. 46. *Epipsocus*. 47. *Gojaoides* n. sp. 1. 48. *Edmockfordia* sp. n. 49. New genus 1. 50. *Gojaoides* n. sp.